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FOREST INSECT SURVEY REPORT OF THE LaTOUR STATE FOREST for 1943 and 1944.

Approved by:

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INTRODUCTION

A survey of the 1943 and 1944 insect infestation on the LaTour State Forest in Shasta County was made October 5 and 6, 1944. This survey was conducted by Ralph C. Hall and Clarence E. Startt of the Bureau of Entomology and Plant Quarantine, Forest Insect Laboratory, Berkeley.

Extent and Type of Survey

This survey was made on a reconnaissance basis supplemented by about 3½ percent actual ground sampling. A reconnaissance was made from the LaTour Fire Tower and by driving through the area by car. Ground samples were from roadside strips 5 chains in width where each infested tree was measured and examined for brood condition. Due to the limited amount of time available for this survey, the principal emphasis of ground sampling was in the mixed conifer and sugar pine-fir type.

Description of the Area

The LaTour State Forest, of approximately 10,000 acres, is located in township 32 north, ranges 2 and 3 east, in the westside forest type. A very wide diversity of timber type and tree species is represented in the area. The timber types include mixed conifer, sugar pine-fir, fir, Douglas fir, Jeffrey pine, lodgepole pine, and sub-alpine. Tree species include ponderosa pine, sugar pine, Jeffrey pine, lodgepole pine, western white pine, white fir, red fir, Douglas fir and incense cedar. The mixed conifer type include areas of excellent merchantable sugar and ponderosa pine timber. Topography in the fir and Jeffrey pine and sugar pine-fir type is generally rugged, but the areas containing the mixed conifer type are gently rolling to moderately steep.

Character of Past Losses

Past losses due to insects in this area in merchantable timber have been moderate to heavy. Past losses in sugar pine and fir have been heavy. Losses in ponderosa pine have been moderate and losses in Jeffrey pine have been light. Based on studies of losses in comparable type in the Burney area, which adjoins the State Forest on the east, it is estimated that losses per acre for the past 20 years have averaged about 150 to 175 board feet in pine and 100 to 125 board feet in other species. Accidental losses due to wind throw and lightning have increased the loss figure to the point that losses have exceeded growth during the past 20 years.

Infestation Conditions for 1943 and 1944

Infestation conditions in this area for 1943 were generally at a low endemic level but the conditions in 1944 indicate that losses of epidemic proportions are occurring locally, particularly in the mixed conifer type. The 1943 infestation was characterized by losses in individual trees, but the 1944 infestation indicates definite grouping tendencies, particularly in sugar pine. Table 1 presents data on the estimated per acre losses in the mixed conifer and sugar pine-fir type. Because of the small percentage

of the ground sampling possible, these data are subject to considerable sampling error and can be considered only as rough approximations. Per acre losses estimated by years and types follow:

Mixed Conifer Type.

The 1943 per acre losses in the type are estimated as 70 board feet for ponderosa pine, 60 board feet for sugar pine and 50 board feet for fir, making a total of 180 board feet per acre in all species for 1943.

The 1944 per acre losses are estimated as 175 board feet in ponderosa pine, 160 board feet in sugar pine, and 80 board feet in fir, making a total of 415 board feet per acre in all species for 1944. Losses in ponderosa pine for 1944 occur as single, large decadent individuals, averaging for the ground samples over 4,000 board feet per tree. Losses in sugar pine occur principally in groups of comparatively thrifty appearing trees. The average volume of the sugar pine trees for 1944 in the ground samples was 2,700 board feet per tree. One group of 6 infested sugar pine trees was observed adjacent to one of the strips, but not included in the sample. The single group of 6 trees was estimated as containing 21,000 board feet.

Sugar pine-Fir Type.

The 1943 per acre losses in this type are estimated as 70 board feet in sugar pine and 25 board feet in fir or a total of 95 board feet for the type. The 1944 per acre losses are estimated as 85 board feet in sugar pine and 60 board feet in fir, making a total of 145 board feet per acre for the type. Losses in the type were confined almost entirely to single individuals.

Table 1. Board feet per acre loss estimates in the mixed conifer and sugar pine-fir timber types on the LaTour State Forest for the 1943 and 1944 seasons.

	TYPE						
	Mixed Conifer Species				Sugar-Pine-Fir		
Year	P.P.	S.P.	Fir	All	S.P.	Fir	All
1943	70	60	50	180	70	25	95
1944	175	160	80	415	85	60	145

Insects Responsible for Losses

The western pine beetle (Dendroctonus brevicomis Lec) is the principal insect involved in the killing of ponderosa pine. The mountain pine beetle (D. monticolae Hopk) attacks sugar pine, lodgepole pine and western white pine. The fir engraver (Scolytus ventralis Lec) and the roundheaded fir borer (Tetropium abietis Fall) are the principal species attacking white and red fir, and the Jeffrey pine beetle (Dendroctonus jeffreyi Hopk) is the principal insect attacking Jeffrey pine. The five spined Ips beetle (Ips confusus Lec) is suspected as being associated with the western pine

and mountain pine beetle in the tops of ponderosa and sugar pine, but time did not permit the felling of any of the trees for complete examinations.

Stumpage Values Destroyed in 1944

An estimate of the stumpage values destroyed in 1944 alone in the mixed conifer type is over $2 per acre.

Outlook for Future Losses

Unless adequate control measures are taken in this area it is expected that future losses will continue high in the mixed conifer type. Much of the merchantable ponderosa pine in the area is overmature and approximately 15 percent of the volume is estimated as being in high insect risk. Much of the sugar pine is past maturity and about 10 percent of the volume of this species is considered as being in prime condition for attack by insects and about 10 percent of the fir is decadent and likely subject to attack by insects. The loss cycle in the adjacent Burney Area shows definite tendency of a rapid up-swing in losses, with the 1944 losses greatly exceeding those for 1943 and the expected losses in 1945 much greater than 1944. Climatic factors have been exceedingly favorable for the development of bark beetles during 1944 with seasonal precipitation and soil moisture at an extremely low level. Unless the deficiency is overcome during the winter of 1944 and the spring of 1945, we can expect the 1945 losses to greatly exceed those for 1944.

Recommendations for Control

With losses for 1944 in the mixed conifer type occurring in large high quality ponderosa and sugar pine and with the infestation showing definite epidemic tendencies, it is recommended that control measures be taken in this type on the LaTour State Forest during the winter of 1944 or the early spring of 1945. It is suggested that utilization control measures be used in this area where the infested trees should be cut and the merchantable parts utilized for lumber and the remaining infested unmerchantable portion burned to destroy all brood present. It is also recommended that a light sanitation-salvage cut be made in this type as soon as possible to remove and utilize all high risk trees so as to effectively reduce future losses. The ideal system of control in this area would be to combine the two methods of control, both direct and indirect, and remove the high risk trees along with the utilization cut of infested trees.

There are two operating mills within about 10 miles from the State Forest, with at least one logging access road up to the south boundary, so that this type of control in the area would appear to be entirely practical.

Cooperation on Control Measures

If control measures are undertaken in this area, the Forest Insect Laboratory at Berkeley is prepared to furnish assistance and advice in spotting the infested and high risk trees.